

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a computing system that runs a diagnostic program for determining errors on a live volume, a computer program product residing on a physical storage medium for implementing~~A computer-readable medium having computer-executable instructions, a method of ensuring against false error reporting during an online verification process by finding errors in a shadow copy of the live volume, the computer program product comprising one or more computer readable storage media having stored thereon computer executable instructions that, when executed by a processor, can cause the distributed computing system to perform the following:~~

receive a request to run a verification tool on a live volume in order to determine if errors exist thereon;

based on the received request, createing a shadow copy of a~~the~~ live volume, which provides a logical duplicate of the live volume at a point in time;

examining the shadow copy to verify an integrity of the live volume, wherein the shadow copy does not change during examination, but users still have access to the live volume during the integrity verification; and

based on the examination of the shadow copy, generate a reporting on the integrity of the live volume, which indicates to a user that one or more errors were found and that the live volume should be take off-line in order to fix the one or more errors~~based on the examining of the shadow copy of the volume.~~

2. (Canceled)

3. (Currently Amended) The computer-readable-medium program product of claim 2, wherein the live volume is changed while examining the shadow copy to verify an integrity of the volume and wherein verifying the integrity is unaffected by any changes to the volume.

4. (Currently Amended) The computer program product-readable-medium of claim 1, wherein the live volume includes meta-data that comprises entries, wherein at least some of the entries comprise file and directory entries.

5. (Currently Amended) The computer program product-readable-medium of claim 54, wherein examining the shadow copy to verify an integrity of the live volume comprises searching the meta-data for file entries which no directory entry indexes.

6. (Currently Amended) The computer- program product-readable-medium of claim 5, wherein examining the shadow copy to verify an integrity of the live volume comprises searching the meta-data for directory entries which index a file entry wherein the file entry does not index the directory entry.

7. (Currently Amended) The computer program product-readable-medium of claim 5, wherein examining the shadow copy to verify an integrity of the live volume comprises searching the meta-data for a directory entry which is indexed by a file entry, wherein the directory entry does not index the file entry.

8. (Currently Amended) The computer program product-readable-medium of claim 4, wherein at least some of the entries comprise attributes of an object associated with the entry, wherein examining the shadow copy to verify an integrity of the live volume comprises examining the at least some of the entries to verify that attributes included in each entry are correct.

9. (Currently Amended) The computer program product-readable-medium of claim 8, wherein one of the attributes comprises a length of a name of an object associated with the entry including the attribute.

10. (Currently Amended) The computer program product-readable-medium of claim 4, wherein examining the shadow copy to verify an integrity of the live volume comprises searching for unreadable entries in the meta-data.

11. (Currently Amended) The computer program product-readable-medium of claim 4, wherein the live volume includes meta-data that comprises entries and wherein examining the shadow copy to verify an integrity of the live volume comprises searching the entries for unreferenced security descriptors.
12. (Currently Amended) The computer program product-readable-medium of claim 4, wherein the meta-data indicates a hierarchy of the objects contained on the volume.
13. (Currently Amended) The computer program product-readable-medium of claim 4, wherein the meta-data indicates where objects are stored on the live volume.
14. (Currently Amended) The computer program product-readable-medium of claim 4, wherein the meta-data includes a security descriptor that indicates access rights associated with at least one object on the live volume.
15. (Currently Amended) The computer program product-readable-medium of claim 1 wherein the live volume comprises a raw volume.
16. (Currently Amended) The computer program product-readable-medium of claim 15, wherein the raw volume lacks a table that identifies objects contained on the live volume.
17. (Currently Amended) The computer program product-readable-medium of claim 15, wherein the raw volume includes a disk including partition information.
18. (Currently Amended) The computer program product-readable-medium of claim 15, wherein the live volume is accessed by a database engine.
19. (Currently Amended) The computer program product-readable-medium of claim 18, wherein examining the shadow copy to verify an integrity of the live volume comprises the database engine examining the shadow copy.

20. (Canceled)

21. (Currently Amended) The computer program product of claim 1, wherein the shadow copy comprises a logical duplicate of the volume at a selected point in time, wherein the shadow copy maintains data found on the live volume at the selected point in time as the volume changes.

22. (Currently Amended) The computer program product-readable medium of claim 1, wherein the shadow copy is created via at least one of a copy-on-write and split mirror.

23. (Currently Amended) In a computing system that runs a diagnostic program for determining errors on a live volume, Aa method of ensuring against false error reporting during an online verification process by finding errors in a shadow copy of the live volume, for verifying an integrity of a volumethe method, comprising:

receiving a request to run a verification tool on a live volume in order to determine if errors exist thereon;

based on the received request, creating a shadow copy of the live volume, the shadow copy comprising a logical duplicate of the live volume at a given point in time;

examining the shadow copy to verify an integrity of the live volume, wherein the shadow copy does not change during examination, but users still have access to the live volume during the integrity verification; and

based on the examination of the shadow copy, generating a reporting on the integrity of the live volume, which indicates to a user that one or more errors were found and that the live volume should be taken off-line in order to fix the one or more errors.

24. (Original) The method of claim 23, wherein the shadow copy is created by one of a plurality of shadow copy providers that each exist on a system, each shadow copy provider capable of providing a shadow copy of the volume upon command.

25. (Original) The method of claim 23, wherein each shadow copy provider is designed to create a shadow copy for a particular type of application.

26. (Original) The method of claim 25, wherein the type of application comprises a volume verification application.

27. (Original) The method of claim 23, wherein the volume comprises a volume formatted in accordance with FAT, NTFS, or UDFS.

28. (Original) The method of claim 23, wherein the volume comprises a volume formatted for UNIX®, LINUX®, OS/2®, or BeOS®.

29. (Currently Amended) A computing system for running a diagnostic program for determining errors on a live verifying an integrity of a volume, which ensures against false error reporting during an online verification process by finding errors in a shadow copy of the live volume, the system comprising:

a verification tool configured to receive a request to run an error diagnostic on a live volume;

a shadow copy provider arranged to create a shadow copy of a live volume, which provides a logical duplicate of the live volume at a give point in time;

an API arranged to interface with the shadow copy provider and to instruct the shadow copy provider to create the shadow copy; and

a verify disk component arranged to verify the integrity of the volume by examining the shadow copy of the volume, wherein the shadow copy does not change during examination, but users still have access to the live volume during the integrity verification; and

a report generator for displaying the results of the examination of the integrity of the live volume, which indicates to a user that one or more errors were found and that the live volume should be take off-line in order to fix the one or more errors.

30. (Canceled)

31. (Original) The system of claim 29, wherein the shadow copy is maintained by actions comprising copying each block that changes on the volume to another location before the block

changes, wherein a request to read data from the shadow copy for a block that has changed in the volume is satisfied with data from the other location.

32 . (Canceled)